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Project	**COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.**	
Client	**BRUHAT BANGALORE MAHANAGARA PALIKE**	
Consultant	**M/s Tejus Consultants**	
Contractor	**M/S Ram and Company, Engineers & Contractors.**	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**23/12/17**
Layer no. or level	WMM I layer	
Depth of hole	250mm	
Field density:	1	2
Wt. of wet material from hole (Ww) gms.	6125	6236
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9685	9640
Wt. of sand in cone (w3) gms.	850	850
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3465	3510
Bulk density of sand (γs)gm/cc	1.33	1.33
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.35	2.36
Moisture meter reading(moisture content)	12.15	12.10
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.10	2.11
MDD	2.13	2.13
OMC	13.00%	13.00%
% compaction obtained	98.42	98.96
% compaction required	98%	98%

Consultant's Representative

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Project	**COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.**	
Client	**BRUHAT BANGALORE MAHANAGARA PALIKE**	
Consultant	**M/s Tejus Consultants**	
Contractor	**M/S Ram and Company, Engineers & Contractors**	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**23/12/17**
Layer no. or level	WMM I layer	
Depth of hole	250mm	
Field density:	1	2
Wt. of wet material from hole (Ww) gms.	6135	6250
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9720	9650
Wt. of sand in cone (w3) gms.	850	850
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3430	3500
Bulk density of sand (γs)gm/cc	1.31	1.31
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.34	2.34
Moisture meter reading(moisture content)	12.00	12.00
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.09	2.09
MDD	2.13	2.13
OMC	13.00%	13.00%
% compaction obtained	98.22	98.06
% compaction required	98%	98%

Consultant's Representative

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Project	**COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.**	
Client	**BRUHAT BANGALORE MAHANAGARA PALIKE**	
Consultant	**M/s Tejus Consultants**	
Contractor	**M/S Ram and Company, Engineers & Contractors**	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**23/12/17**
Layer no. or level	WMM I layer	
Depth of hole	250mm	
Field density:	1	2
Wt. of wet material from hole (Ww) gms.	6250	6315
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9670	9635
Wt. of sand in cone (w3) gms.	850	850
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3480	3515
Bulk density of sand (γs)gm/cc	1.31	1.31
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.35	2.35
Moisture meter reading(moisture content)	12.00	12.00
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.10	2.10
MDD	2.13	2.13
OMC	13.00%	13.00%
% compaction obtained	98.62	98.66
% compaction required	98%	98%

Consultant's Representative

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Test Report on Cement

Project	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Ram and Company, Engineers & Contractors.
Sample ID	Cement
Date of Sample Tested	23/12/17
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	35 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	387 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	4mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	27.00%	

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TEST REPORT					
Clients	Bruhat Bangalore Mahanagara Palike				
Project	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.				
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore				
Contractor	M/S Ram and Company, Engineers & Contractors.				
Total Weight:	10000	gms			
SIEVE ANALYSIS					
Type of Material	20 mm down size		**Proposed Use**	**Slab and Beam Concrete**	
Sample Location	At Plant		**Date of Sampling**	23/12/2017	
			Date of Testing	23/12/2017	
IS Sieve Size	**Weight Retained**	**Cum. Weight Retained**	**Cum. % Retained**	**Cum. % Passing**	**Spec. Limit (%) Passing**
40.00 mm	0	0	0	100	**100**
20.00 mm	265	265	2.65	97.35	**95 - 100**
10.00 mm	4985	5250	52.50	47.50	**25 - 55**
4.75 mm	4225	9475	94.75	5.25	**0 - 10**
Pan	525	10000			
Remarks :	Satisfactory / Not Satisfactory				

Consultant's Representative

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike				
Project	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.				
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore				
Contractor	M/S Ram and Company, Engineers & Contractors.				
Total Weight:	10000	gms			

SIEVE ANALYSIS

Type of Material	20 mm down size		**Proposed Use**	**Slab and Beam Concrete**	
Sample Location	At Plant		**Date of Sampling**	23/12/2017	
			Date of Testing	23/12/2017	
IS Sieve Size	**Weight Retained**	**Cum. Weight Retained**	**Cum. % Retained**	**Cum. % Passing**	**Spec. Limit (%) Passing**
40.00 mm	0	0	0	100	**100**
20.00 mm	288	288	2.88	97.12	**95 - 100**
10.00 mm	4569	4857	48.57	51.43	**25 - 55**
4.75 mm	4369	9226	92.26	7.74	**0 - 10**
Pan	774	10000			
Remarks :	Satisfactory / Not Satisfactory				

Consultant's Representative

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike	
Project	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.	
Consultants	TEJUS CONSULTANTS	
Contractor	M/S Ram and Company, Engineers & Contractors.	
Total Weight:	10000	gms

SIEVE ANALYSIS

Type of Material	12.5 mm down size		Proposed Use	Slab and Beam Concrete	
Sample Location	Plant		Date of Sampling	23/12/2017	
			Date of Testing	23/12/2017	
IS Sieve Size (in mm)	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
20.0	0	0	0	100	100
12.5	560	560	5.60	94.40	90-100
10.0	3985	4545	45.45	54.55	40-85
4.75	4986	9531	95.31	4.69	0-10
Pan	469	10000			

Remarks : Satisfactory / Not Satisfactory

Consultant's Representative

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Test report on Compressive strength of concrete cubes

Project	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Ram and Company, Engineers & Contractors.
Location:	Seniour Citizen Building, Vidyaranyapura
Grade of concrete:	M25 (Slab)
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	26/12/17	23/1/18	28 days	8.578	22500	563	25.02	25.01
2	26/12/17	23/1/18	28 days	8.569	22500	563	25.02	
3	26/12/17	23/1/18	28 days	8.598	22500	562	24.98	

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Test report on Compressive strength of concrete cubes

Project	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Ram and Company, Engineers & Contractors.
Location:	Seniour Citizen Building, Vidyaranyapura
Grade of concrete:	M25 (Slab)
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	26/12/17	23/1/18	28 days	8.568	22500	560	24.89	25.02
2	26/12/17	23/1/18	28 days	8.620	22500	564	25.07	
3	26/12/17	23/1/18	28 days	8.621	22500	565	25.11	

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TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

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Test report on Compressive strength of concrete cubes

Project	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Ram and Company, Engineers & Contractors.
Location:	Seniour Citizen Building, Vidyaranyapura
Grade of concrete:	M25 (Slab)
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	26/12/17	02/01/18	7 days	8.562	22500	388	17.24	17.07
2	26/12/17	02/01/18	7 days	8.621	22500	381	16.93	
3	26/12/17	02/01/18	7 days	8.541	22500	383	17.02	

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Test report on Compressive strength of concrete cubes

Project	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Ram and Company, Engineers & Contractors.
Location:	Seniour Citizen Building, Vidyaranyapura
Grade of concrete:	M25 (Slab)
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	26/12/17	02/01/18	7 days	8.526	22500	392	17.42	17.14
2	26/12/17	02/01/18	7 days	8.621	22500	380	16.89	
3	26/12/17	02/01/18	7 days	8.524	22500	385	17.11	

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Test report on Compressive strength of concrete cubes

Project	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Ram and Company, Engineers & Contractors.
Location:	Seniour Citizen Building, Vidyaranyapura
Grade of concrete:	M25 (Slab)
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	26/12/17	02/01/18	7 days	8.621	22500	386	17.16	17.08
2	26/12/17	02/01/18	7 days	8.564	22500	385	17.11	
3	26/12/17	02/01/18	7 days	8.689	22500	382	16.98	

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Test report on Compressive strength of concrete cubes

Project	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Ram and Company, Engineers & Contractors.
Location:	Seniour Citizen Building, Vidyaranyapura
Grade of concrete:	M25 (Slab)
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	26/12/17	23/1/18	28 days	8.458	22500	562	24.98	25.13
2	26/12/17	23/1/18	28 days	8.521	22500	559	24.84	
3	26/12/17	23/1/18	28 days	8.568	22500	575	25.56	

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Project	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	M/S Ram and Company, Engineers & Contractors.

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Proposed Use	WMM	**Date of Sampling**	**27/12/17**
Sample Location	**At plant**	**Date of Testing**	**27/12/17**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	340.00	345.00	342.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	260.00	265.00	265.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	80.00	80.00	77.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	23.53	23.19	22.51	
5	Average Aggregate impact value	(%)	23.08			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

Consultant's Representative

TEJUS CONSULTANTS

Project	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	M/S Ram and Company, Engineers & Contractors.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	WMM	Proposed Use	WMM
Sample Location	At plant	Date of Sampling	27/12/17
		Date of Testing	27/12/17

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	720	65	655	52
16.0	12.5	980	125	855	115
12.5	10.0	410	72	338	58
10.0	6.3	580	45	535	45
Total		2690	307	2383	270

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	11.41
Elongation Index(%)	11.33
Combined FI+EL (%)	22.74

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Project	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	M/S Ram and Company, Engineers & Contractors.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	WMM	Proposed Use	WMM
Sample Location	At plant	Date of Sampling	27/12/17
		Date of Testing	27/12/17

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	840	69	771	53
16.0	12.5	978	122	856	120
12.5	10.0	401	78	323	67
10.0	6.3	568	42	526	48
Total		**2787**	**311**	**2476**	**288**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	11.16
Elongation Index(%):	11.63
Combined FI+EL (%)	22.79

Consultant's Representative

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Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors.
Date of Testing	:	27/12/17
Type of Mix	:	WMM
Sample I/D	:	WMM 1

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	At plant	Date of Sampling:	27/12/17
		Date of testing:	27/12/17
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	268	268	2.68	97.32	95-100
22.4	2136	2404	24.04	75.96	60-80
11.2	1968	4372	43.72	56.28	40-60
4.75	2156.0	6528	65.28	34.72	25-40
2.36	1236.0	7764	77.64	22.36	15-30
0.6	869.0	8633	86.33	13.67	8.0-22.0
0.075	725.0	9358	93.58	6.42	0-8
Pan	642.0				
Total	10000.0				

Consultant's Representative

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Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors.
Date of Testing	:	27/12/17
Type of Mix	:	WMM
Sample I/D	:	WMM 2

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	At plant	**Date of Sampling:**	27/12/17
		Date of testing:	27/12/17
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	235	235	2.35	97.65	95-100
22.4	2214	2449	24.49	75.51	60-80
11.2	1845	4294	42.94	57.06	40-60
4.75	1968.0	6262	62.62	37.38	25-40
2.36	1245.0	7507	75.07	24.93	15-30
0.6	968.0	8475	84.75	15.25	8.0-22.0
0.075	956.0	9431	94.31	5.69	0-8
Pan	569.0				
Total	10000.0				

AE-II

Consultant's Representative

TEJUS CONSULTANTS

TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors.
Date of Testing	:	27/12/17
Type of Mix	:	WMM
Sample I/D	:	WMM 3

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	At plant	**Date of Sampling:**	27/12/17
		Date of testing:	27/12/17
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	225	225	2.25	97.75	95-100
22.4	2365	2590	25.90	74.10	60-80
11.2	1869	4459	44.59	55.41	40-60
4.75	2145.0	6604	66.04	33.96	25-40
2.36	1325.0	7929	79.29	20.71	15-30
0.6	886.0	8815	88.15	11.85	8.0-22.0
0.075	665.0	9480	94.80	5.20	0-8
Pan	520.0				
Total	10000.0				

AE-11

Consultant's Representative

TEJUS CONSULTANTS

Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors.
Date of Testing	:	27/12/17
Type of Mix	:	WMM
Sample I/D	:	WMM 4

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	At plant	Date of Sampling:	27/12/17
		Date of testing:	27/12/17
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	212	212	2.12	97.88	95-100
22.4	2465	2677	26.77	73.23	60-80
11.2	1756	4433	44.33	55.67	40-60
4.75	1865.0	6298	62.98	37.02	25-40
2.36	1256.0	7554	75.54	24.46	15-30
0.6	968.0	8522	85.22	14.78	8.0-22.0
0.075	956.0	9478	94.78	5.22	0-8
Pan	522.0				
Total	10000.0				

Consultant's Representative

TEJUS CONSULTANTS

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Project	**COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.**	
Client	**BRUHAT BANGALORE MAHANAGARA PALIKE**	
Consultant	**M/s Tejus Consultants**	
Contractor	**M/S Ram and Company, Engineers & Contractors**	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**28/12/17**
Layer no. or level	WMM I layer	
Depth of hole	250mm	
Field density:	1	2
Wt. of wet material from hole (Ww) gms.	6412	6435
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9580	9585
Wt. of sand in cone (w3) gms.	850	850
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3570	3565
Bulk density of sand (γs)gm/cc	1.31	1.31
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.35	2.36
Moisture meter reading(moisture content)	12.00	12.40
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.10	2.10
MDD	2.13	2.13
OMC	12.80%	12.80%
% compaction obtained	98.63	98.77
% compaction required	98%	98%

Consultant's Representative

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Project	**COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.**	
Client	**BRUHAT BANGALORE MAHANAGARA PALIKE**	
Consultant	**M/s Tejus Consultants**	
Contractor	**M/S Ram and Company, Engineers & Contractors**	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**28/12/17**
Layer no. or level	WMM I layer	
Depth of hole	250mm	
Field density:	1	2
Wt. of wet material from hole (Ww) gms.	6153	6215
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9735	9700
Wt. of sand in cone (w3) gms.	850	850
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3415	3450
Bulk density of sand (γs)gm/cc	1.31	1.31
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.36	2.36
Moisture meter reading(moisture content)	12.10	12.30
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.11	2.10
MDD	2.13	2.13
OMC	12.80%	12.80%
% compaction obtained	98.85	98.66
% compaction required	98%	98%

AE-11

Consultant's Representative

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Project	**COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.**	
Client	**BRUHAT BANGALORE MAHANAGARA PALIKE**	
Consultant	**M/s Tejus Consultants**	
Contractor	**M/S Ram and Company, Engineers & Contractors**	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**28/12/17**
Layer no. or level	WMM I layer	
Depth of hole	250mm	
Field density:	1	2
Wt. of wet material from hole (Ww) gms.	6321	6345
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9640	9620
Wt. of sand in cone (w3) gms.	850	850
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3510	3530
Bulk density of sand (γs)gm/cc	1.31	1.31
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.36	2.35
Moisture meter reading(moisture content)	12.20	12.10
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.10	2.10
MDD	2.13	2.13
OMC	12.80%	12.80%
% compaction obtained	98.71	98.62
% compaction required	98%	98%

Consultant's Representative

TEJUS CONSULTANTS

Project	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	M/S Ram and Company, Engineers & Contractors.

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Proposed Use	WMM	**Date of Sampling**	**30/1/2017**
Sample Location	**At plant**	**Date of Testing**	**30/1/2017**

Sl. No.	**Description**		**Test No.**			**Spec Limit (%)**
			1	**2**	**3**	
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	355.00	368.00	378.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test	(Wb)	270.00	280.00	295.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	85.00	88.00	83.00	
4	Aggregate Impact Value (%)	(Wc/Wa)* 100	23.94	23.91	21.96	
5	Average Aggregate impact value	(%)	23.27			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

Consultant's Representative

TEJUS CONSULTANTS

Project	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	M/S Ram and Company, Engineers & Contractors.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	WMM	Proposed Use	WMM
Sample Location	At plant	Date of Sampling	30/1/2017
		Date of Testing	30/1/2017

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	835	78	757	55
16.0	12.5	1289	110	1179	126
12.5	10.0	425	70	355	69
10.0	6.3	524	78	446	42
Total		3073	336	2737	292

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.93
Elongation Index(%):	10.67
Combined FI+EL (%)	21.60

Consultant's Representative

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Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors.
Date of Testing	:	30/1/2017
Type of Mix	:	WMM
Sample I/D	:	WMM 1

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	At plant	**Date of Sampling:**	30/1/2017
		Date of testing:	30/1/2017
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	210	210	2.10	97.90	95-100
22.4	2125	2335	23.35	76.65	60-80
11.2	1986	4321	43.21	56.79	40-60
4.75	2145.0	6466	64.66	35.34	25-40
2.36	1248.0	7714	77.14	22.86	15-30
0.6	812.0	8526	85.26	14.74	8.0-22.0
0.075	795.0	9321	93.21	6.79	0-8
Pan	679.0				
Total	10000.0				

AE/I

Consultant's Representative

TEJUS CONSULTANTS

Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors.
Date of Testing	:	30/1/2017
Type of Mix	:	WMM
Sample I/D	:	WMM 2

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	At plant	Date of Sampling:	30/1/2017
		Date of testing:	30/1/2017
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	235	235	2.35	97.65	95-100
22.4	2356	2591	25.91	74.09	60-80
11.2	2145	4736	47.36	52.64	40-60
4.75	2136.0	6872	68.72	31.28	25-40
2.36	975.0	7847	78.47	21.53	15-30
0.6	640.0	8487	84.87	15.13	8.0-22.0
0.075	986.0	9473	94.73	5.27	0-8
Pan	527.0				
Total	10000.0				

Consultant's Representative

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